

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 14 OCT 2005

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| Applicant's or agent's file reference RPS/P71340WO00 | FOR FURTHER ACTION See Form PCT/PEA/416 | |
| International application No. PCT/GB2004/003134 | International filing date (day/month/year) 16.07.2004 | Priority date (day/month/year) 16.07.2003 |
| International Patent Classification (IPC) or national classification and IPC D21C5/02 | | |
| Applicant FIRA INTERNATIONAL LIMITED et al. | | |

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
 - ☒ sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:
 - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

- This report contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

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|---|---|
| Date of submission of the demand 16.05.2005 | Date of completion of this report 13.10.2005 |
| Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized Officer Karlsson, L Telephone No. +49 89 2399-8424 |



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/003134

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-11 as originally filed

Claims, Numbers

1-18 received on 17.05.2005 with letter of 16.05.2005

Drawings, Sheets

1/1 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing *(specify):*
 - ☐ any table(s) related to sequence listing *(specify):*
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing *(specify):*
 - ☐ any table(s) related to sequence listing *(specify):*

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
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International application No.
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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|---------------|
| Novelty (N) | Yes: Claims | 2-5,7,8,10-18 |
| | No: Claims | 1,6,9 |
| Inventive step (IS) | Yes: Claims | |
| | No: Claims | 1-18 |
| Industrial applicability (IA) | Yes: Claims | 1-18 |
| | No: Claims | |

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V.

1. The following documents are referred to in this communication:

D1 : US 6 251 221 B1 (BURKART LEONARD) 26 June 2001 (2001-06-26)

D2 : EP 0 671 504 A (SCHWEITZER JACOB ; VODERMAIR HERMANN (DE);
SCHIMMER WOTTRICH RENATE (D) 13 September 1995 (1995-09-13)

2.1 To use electromagnetic radiation simultaneously as the board material is immersed or soaked in a liquid medium is already known from D1 and D2 (see D1, claims 1-6, examples 1,2; see D2, page 1, paragraph 1, claims 1-6). The wording of the present claim 1 further defines specific frequency ranges, which corresponds to microwave radiation and radio frequency waves. Indeed, this corresponds to the radiation energy of D1. Hence, these features are inherently known from D1. Consequently, a certain swelling must also take place i D1, since the same treatment occurs in both methods. In any case, whether and to what extent a swelling of the board material actually takes place is more of a speculative nature.

Thus, the features of the present claim 1 does not meet the requirements of Article 33.2 PCT with regard to the disclosure of D1.

2.2 Presently do the separate features of the dependent claims not seem to add any novel and inventive matter with regard to the disclosure of D1 and D2 (Art.33.2 and/or 33.3 PCT). However, a combination of these features could nevertheless meet the requirements of Article 33.3 PCT.

Re Item VII

3.1 D1, D2 and/or D3:US-A-4 188 259 should be acknowledged in the description as representing closest prior art (Rule 5.1(a)(i)-(vi) PCT).

Re Item VIII

4. The present set of claims does not meet the requirements of Article 6 PCT for the following reasons:

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REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/GB2004/003134

4.1 According to the present description the recycling of fibreboards aims to recover the lignocellulosic materials in said board. Thus, the wording "constituents" of claim 1 should be correspondingly amended.

4.2 From the description it becomes clear (see page 1) that the recycling process of the present invention refers to fibreboards and not paperboards. Needless to say, but these two materials are quite different from each other, and they cannot thus be considered to be equivalent products. Thus, it should be clarified in claim 1 that the method refers to a recycling, or recovering, of fibreboard materials.

EPO - DG 1

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17. 05. 2005

CLAIMS:

(43)

1. A method of recovering a constituent of a board material comprised of a matrix of adhesively bonded

5 lignocellulosic elements, the method comprising

(a) swelling the material by subjecting the material to a combination of (i) electromagnetic radiation and (ii) soaking or immersion in a liquid medium to swell the material, wherein the electromagnetic radiation has a

10 frequency in the range of from 896 ± 20 MHz to 2450 ± 25 MHz or a frequency in the range of from 100 kHz to 100 MHz, and

(b) recovering the constituent.

2. A method as claimed in claim 1, wherein the
15 electromagnetic radiation has a frequency of 896 ± 20 MHz.

3. A method as claimed in claim 1, wherein the electromagnetic radiation has a frequency of 2450 ± 25 MHz.

20 4. A method as claimed in claim 1, wherein the electromagnetic radiation has a frequency in the range of from 10 MHz to 50 MHz.

5. A method as claimed in any of claims 1 to 4,
25 wherein the power of the electromagnetic radiation is in the range of from 500 W to 30 kW.

6. A method as claimed in any of claims 1 to 5,
wherein the liquid medium comprises water.

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7. A method as claimed in any one of claims 1 to 5, wherein the liquid medium comprises an organic or inorganic solvent.

5 8. A method as claimed in any of claims 1 to 7, wherein the board material is initially subjected to the electromagnetic radiation (step (i)) and then immersed in the liquid medium (step (ii)).

10 9. A method as claimed in any one of claims 1 to 8, wherein the liquid medium is at elevated temperature.

10. A method as claimed in claim 9, wherein the liquid medium is at a temperature of from 60° to 90°C.

15 11. A method as claimed in any one of claims 1 to 7, wherein the board material is immersed in the liquid medium and subjected to the electromagnetic radiation while immersed.

20 12. A method as claimed in any one of claim 1 to 11, wherein the treated board material is subjected to mechanical agitation in the liquid medium to produce a fibrous suspension.

25 13. A method as claimed in claim 12, wherein lignocellulose is recovered from the fibrous suspension.

30 14. A method as claimed in claim 13, wherein the lignocellulose is recovered by drying of the suspension.

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15. A method as claimed in any of claims 1 to 14, wherein the lignocellulose based board is or comprises a particle board or fibre board.

5 16. A method as claimed in claim 15, wherein the lignocellulose based board is or comprises Medium Density Fibreboard.

10 17. A method as claimed in claim 1, wherein the electromagnetic radiation comprises microwaves.

18. A method as claimed in claim 1, wherein the electromagnetic radiation comprises radio frequency (RF) waves.

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